

Ranking Disease Treatment Outcomes

Disease	Predicted success	Medical compliance
Addiction		
Hypertension		
Diabetes		

Ruth's Story

Ruth is 24 years old and has a good job and a boyfriend. Everything seems to be going well in her life. But it hasn't always been that way. When she was 14 years old, her friends began smoking cigarettes and drinking alcohol. Because she wanted to be part of the group, she also began smoking and drinking when she went to parties with her friends. One night when Ruth was 16, her friends had some marijuana and they all tried smoking it. After using marijuana for about a year, she began experimenting with other drugs and, by the time she was 18, Ruth was using heroin every day. Her drug habit was costing her \$75 a day. After awhile, her boyfriend left her and the rest of her friends were tired of her asking for money to buy drugs. She was fired from her part-time job because she had missed work so many times. She was arrested several times for shoplifting items from local department and discount stores. She tried to quit using heroin several times, but she had strong cravings for the drug. Each time she began having symptoms of withdrawal, Ruth went back to abusing drugs. When Ruth was 20, her brother convinced her to go to a drug rehabilitation center. The doctors at the center began treating her with methadone and she participated in group behavioral treatments. She followed her treatment exactly as the doctors prescribed and, after six months, Ruth thought she had beaten her addiction. She enrolled in college and made new friends. Her friends got her involved in sports, and Ruth found that she enjoyed running. She even competed in a 10K run. She continued her methadone treatment and saw her therapist every two months. When she was 22, Ruth ran into her old high school friends at a party and did some heroin with them. She thought she could handle it. Over the next couple of months, however, she quit her methadone treatment and began doing heroin more frequently, every couple of days. She was beginning to isolate herself from her friends and was having trouble at work. Ruth was scared. She called her doctors and they started her treatments again. With her doctors' help, Ruth realized that she needed to continue her medication and her counseling.

Mike's Story

Mike grew up an active boy who loved participating in sports. When he was 14, he was diagnosed with Type I diabetes. Mike learned how to measure his blood glucose levels before meals and give himself insulin injections based on his blood glucose level. He also learned how he should change his diet. Mike learned what types and amounts of foods he could eat and how he should schedule the time interval between meals. But, actually making these changes was very difficult for him. After discussions with the family doctor, Mike and his family decided he would spend six weeks at a summer camp for teenagers who have diabetes. While at camp, Mike ate the correct diet and learned how other kids cope with their diabetes. He even made several friends there. After he got home, Mike often e-mailed his friends from camp and they would talk about school, sports, and how diabetes changed their lives. Mike's life was pretty normal for a teenager—school, sports, friends. He found that as long as he regulated his blood glucose levels, he could do most of what he wanted. When he was 16, he got his driver's license. On weekends, he would sometimes forget his diet and eat hamburgers, french fries, and sodas with his friends. Because he only had a minor problem the first time he did this, he continued to ignore his diet when he was with his friends. One Saturday night, his parents had to take him to the emergency room because his blood sugar level was over 600. Although this scared him, he recovered. After a few weeks, though, he went back to eating whatever he wanted instead of the proper diet, especially if he was with his friends. Mike only checked his blood glucose level if he thought he might have a problem. He ended up back in the hospital several more times that year. His grades fell from As to Cs because he could not keep up with the work. He had trouble concentrating and was tired a lot. He and his parents argued all the time about Mike's failure to eat a healthy diet. The last time Mike went into the hospital, the doctor warned him that he was at risk for permanent health problems if he didn't control his blood glucose level: he could have kidney failure or could go blind. Mike's doctor recommended a specialist who could help Mike learn to cope with diabetes and still maintain an active social life. Mike's family also talked to the specialist to learn how they could help him. For the past four years, Mike has been able to control his blood sugar levels and has only had two minor episodes.

Carol's Story

Carol is the mother of two high school students. Although she is only 42 years old, her doctor has told her that she has high blood pressure, or essential hypertension. On one visit to her doctor, her blood pressure was 160/105. When her doctor checked her blood pressure again on another day, her blood pressure was 150/95. Her doctor prescribed medicine to lower her blood pressure. The doctor also told her to watch her diet and to begin exercising. The doctor told Carol that she needed to be very careful in controlling the amount of salt that she ate in her diet. Carol followed the doctor's plan for about six months. Gradually she started skipping her exercise sessions and gave up making healthy eating choices. Carol had a difficult time skipping the potato chips and peanuts that she liked to eat for an afternoon snack. Often she forgot to take her medication. At her next appointment, Carol and her doctor discussed the problems she was having, and the doctor informed her that her blood pressure had actually gone up. The doctor talked to her about getting advice from a nutritionist, working with a personal trainer to help her establish an exercise plan, and seeing a psychologist who could help her make the needed changes. Carol decided that she didn't need help from those people and tried again to diet and exercise on her own. But, with her long hours at work and her family to take care of, she found it difficult. Because she was missing work more often, Carol's boss gave a promotion to someone else instead of her. Carol's kids complained that she didn't come to their football games and band concerts anymore. One night, Carol complained that she was having another headache and her vision was blurry. Her kids commented that she was slurring her words when she spoke. Her husband immediately called an ambulance to take her to the emergency room. Carol received medical help in time, but the doctors told her that she had a mild stroke.

Disease Reference Information

HEROIN ADDICTION

The following information is drawn from the *NIDA Research Report Series, Heroin: Abuse and Addiction* (www.nida.nih.gov).

What is heroin?

Heroin is a member of the opiate family of drugs. Heroin is derived from morphine; in the brain, heroin is changed back into morphine. Because heroin enters the blood and reaches the brain more quickly than morphine, drug abusers and addicts often abuse heroin instead of morphine. Heroin is a white powder that is most often dissolved in saline and injected into the bloodstream, but it can also be snorted (sniffed) or smoked.

What does heroin do in the body?

After taking heroin, the abuser experiences a “rush,” the intensity of which depends on the amount of drug taken and how the abuser takes it. The rush is accompanied by a warm flushing of the skin, dry mouth, and a heavy feeling in the extremities, which can be accompanied by nausea, vomiting, and severe itching. Heroin blocks pain messages transmitted from the body. After the initial effects, abusers will be drowsy for several hours. Mental function is clouded by heroin’s effect on the nervous system. Cardiac functions slow; breathing is also severely slowed, sometimes to the point of death. Overdose is a particular risk because the amount and purity of the drug cannot be accurately known.

Treatment for heroin abuse and addiction

The first step in treatment is detoxification to rid the body of the drug. During detoxification, patients adjust to a drug-free state. This stage is short-term and needs to lead to a long-term treatment plan.

Methadone is a synthetic opiate that blocks the effects of heroin and eliminates withdrawal symptoms. Methadone binds to the same opiate receptor that morphine does (remember that heroin breaks down into morphine in the brain). Methadone, however, binds to the receptor more tightly than heroin. People usually take methadone orally one time each day to suppress cravings and withdrawal symptoms for 24–36 hours (four to six times longer than heroin). Methadone is not intoxicating or sedating, and does not produce the feelings of euphoria that heroin does, unless taken in very high doses. Individuals taking methadone do feel pain and have emotional reactions. People can take methadone continuously for many years without problems.

Other drugs used to treat heroin addiction include LAAM and naltrexone, but these are not used as extensively as methadone.

The most effective treatment combines pharmacological approaches (medications) with behavioral therapies. Behavioral therapies may be either on a residential or outpatient basis, but they need to match the needs of the patient.

Long-term consequences of uncontrolled or poorly controlled heroin abuse:

If heroin abuse is untreated, it can lead to the following health problems:

- addiction
- scarred and/or collapsed veins
- bacterial infections of the blood vessels and heart valves
- abscesses and other soft-tissue infections
- liver disease
- kidney disease
- lung diseases such as pneumonia and tuberculosis

In addition, the additives in street heroin often include substances that clog blood vessels that lead to the lungs, liver, kidneys, or brain. Contaminated injection equipment can lead to blood-borne viral infections including hepatitis B, hepatitis C, and HIV, which can then be passed on to other individuals through shared needles or sexual activity.

DIABETES TYPE I

The following information is drawn from the American Diabetes Association Web site (www.diabetes.org).

What is diabetes?

Type I diabetes is a disease that affects the way the body uses food. In a person with Type I diabetes, the body destroys the cells in the pancreas that produce insulin. Insulin is a hormone that regulates the level of sugar in the blood. Type I diabetes is also called immune-mediated diabetes, and was formerly known as insulin-dependent diabetes.

In Type II diabetes, once known as non-insulin-dependent diabetes, the pancreas does not make enough insulin or the body cannot use it properly. We will not discuss Type II diabetes any further.

Cause:

Scientists do not know what causes Type I diabetes, but there appears to be a genetic component to the cause. Other factors also are likely to increase the risk for getting diabetes. Diabetes is not contagious.

Symptoms and diagnosis:

Signs and symptoms of diabetes are:

- high levels of sugar in the blood
- high levels of sugar in the urine
- frequent urination (and/or bed-wetting in children)
- extreme hunger

- extreme thirst
- extreme weight loss
- weakness and tiredness
- feeling edgy and having mood changes
- feeling sick to the stomach and vomiting

Treatment:

Treatment for Type I diabetes involves keeping the level of sugar in the blood as close to normal (80-120 mg/dl) as possible. Treatment usually includes:

- Insulin injections to lower blood sugar. The number of injections required depends on the individual and the type of insulin treatment used.
- A meal plan to control changes in blood sugar levels. Food raises blood sugar levels. A dietician can help develop a plan that lets the diabetic eat the food he or she enjoys.
- Exercise to lower the blood sugar.
- Blood and urine testing to determine if the blood-sugar level is low, normal, or high. The results enable the diabetic to modify his or her food intake, exercise, or insulin injections.

Long-term consequences of uncontrolled or poorly controlled diabetes:

- blindness
- kidney disease
- nerve damage leading to abnormal sensations, including pain in the hands, feet, and legs
- vascular (blood vessel) disease leading to heart disease and strokes

Long-term outlook for diabetes if treated and controlled:

People with Type I diabetes can live happy, healthy lives if they follow their treatment plan.

HYPERTENSION

The following is drawn from materials from the American Heart Association (www.americanheart.org) and the National Heart, Lung, and Blood Institute (www.nhlbi.nih.gov/health/public/heart/index.htm).

What is hypertension?

Hypertension, or high blood pressure, is defined in an adult as a blood pressure greater than, or equal to, 140 mm Hg systolic pressure or greater than or equal to 90 mm Hg diastolic pressure. Hypertension does not refer to being tense, nervous, or hyperactive. Optimal blood pressure for an adult is 120 mm Hg systolic and 80 mm Hg diastolic. Blood pressures are normally written as systolic/diastolic, such as 120/80.

Cause:

In most cases, the cause of high blood pressure is unknown. This type of high blood pressure is called *essential hypertension*.

In the remaining cases (5%-10% of cases), high blood pressure, called secondary hypertension, is a result of another health problem such as a kidney abnormality, tumor of the adrenal gland, or congenital defect of the aorta. Blood pressure usually returns to normal when the underlying cause is corrected.

Symptoms and diagnosis:

Diagnosis of high blood pressure is based on the average of two or more readings taken at each of two or more visits after an initial screening.

Hypertension usually has no symptoms. Many people have high blood pressure and don't know it. If hypertension is severe, symptoms may include:

- tiredness
- confusion
- headaches
- anxiety
- excessive perspiration
- pale skin
- muscle tremors
- chest pain

Treatment:

The prescribed treatment depends on the severity of hypertension, but may involve the following components:

- taking medication
- modifying diet to reduce sodium intake
- increasing exercise
- maintaining proper weight
- limiting alcohol intake

Long-term consequences of uncontrolled hypertension:

High blood pressure directly increases the risk of coronary heart disease (which leads to heart attack) and stroke, especially along with other risk factors. Uncontrolled hypertension can also lead to renal failure.

Long-term outlook for hypertension if treated and controlled:

Hypertension is controllable with treatment, which may require periodic adjustment.

Evaluating the Cases

As a team, decide which member of the group will watch or read each case study. When you finish with your case, answer questions 1–6. Then, discuss and answer questions 7–11 with your group members. If you wish, watch or read the case studies again to help with your answers.

Case Study: _____

1. What disease does the individual have? Is it chronic or acute?
2. How did the disease change the individual's life?
3. What is the recommended treatment?
4. What did the individual do to improve his or her recovery?
5. What did the individual do that impaired his or her recovery?
6. Are there other things the individual could do to help with the disease?

Comparing the Cases

7. Which individuals were successful in their treatment? Which individuals were not?
8. Who was cured of their disease? What is the difference between treatment and cure?
9. How are the treatments for the different diseases similar?
10. How are the treatments different?
11. Can you identify similarities and differences in the actions or strategies that individuals took to help them deal with their disease?